WHAT IS CLAIMED IS:

1. A process for producing a flow cell for the spectroscopic analysis of samples to be passed through, the process comprising the following steps:
   (a) provision of a first (10) and of a second (22) window, the second window (22) having at least two sample flow channels (24) for supplying and removing the sample to be analyzed;
   (b) application of a structured thin layer (18) to one of the windows (10, 22);
   (c) contacting and liquid-tight securing of the thin layer (18) to the other (22, 10) window, in such a way that facing, plane-parallel window surfaces (14, 20) of the windows (10, 22) and the thin layer (18) delimit a flow chamber (26) which is accessible only through the sample flow channels (24), the windows (10, 22) being optically transparent at least in some regions at least in the region of the flow chamber (26); and
   (d) filling at least some regions of a filling chamber (28) between the windows (10, 22) which is separated from the flow chamber (26) by the thin layer (18) and adjoins the structured thin layer (18) with adhesive.

2. The process as claimed in claim 1, wherein the liquid-tight securing of the thin layer (18) to the other (22, 10) window includes a softening of the thin layer

(18) to temporarily lower its viscosity by increasing the temperature of the thin layer (18) and/or by increasing the pressure applied on the thin layer (18) to the other (22, 10) window.

3. The process as claimed in Claim 1, wherein the thin layer (18) consists of a viscous material having a viscosity of at least 10 000 mPas at a temperature of 20°C and the liquid-tight securing of the thin layer (18) to the other (22, 10) window includes the step of pressing the viscous thin layer (18) onto the other window (22, 10).

4. The process as claimed in one of the preceding claims, wherein a structured spacer layer (16) with predetermined layer thickness is applied to one of the window surfaces (14, 20) of at least one of the windows (10, 22), and the spacer layer (16) comes into contact with the window surface (20, 14) of the other window (22, 10) in step (c) in such a way that the distance between the window surfaces (14, 20) is determined by the thickness of the spacer layer (16).

5. The process as claimed in claim 4, wherein the spacer layer (16) is applied in an edge region of the window (10, 22).

6. The process as claimed in one of the preceding claims, wherein the thin layer (18) has a complete circular shape.

7. The process as claimed in one of the preceding claims, wherein at least one of the windows (10, 22) has at least one adhesive channel (12) for feeding the adhesive into the filling chamber (28).

8. The process as claimed in one of the preceding claims, wherein the thin layer (18) is removed after step (d).

9. The process as claimed in one of the preceding claims, wherein the distance between the window surfaces (14, 20) after step (d) is in the range from 0.5 to 100 μm, preferably from 1 to 50 μm and most preferably from 3 to 15 μm.